PRICE LIST

HOWARD

IRON WORKS

R. L. HOWARD & SON,

BUFFALO, N. Y.

SEPTEMBER, 1873.

Subject to changes of the Market, without notice.

PRESS OF WARREN, JOHNSON & CO., BUFFALO.

THE

HOWARD IRON WORKS

MANUFACTURERS OF

SCHLENKER'S BOLT CUTTER,

HAND HOISTING MACHINE,

BUFFALO POWER HOISTING MACHINE

HOWARD PARALLEL BENCH VISE,

TAPS AND DIES,

STEEL AND IRON SET SCREWS, CENTERING LATHES

RAILROAD SUPPLIES.

STEAM ENGINES.

SHAFTING, HANGERS, PULLEYS, BARK MILLS, CONVEYORS,

AND OTHER TANNERY FIXTURES.

CAST IRON SINKS.

SCHLENKER'S

PATENT BOLT CUTTER.

THE superiority of this Bolt Cutter consists in the perfect clean cut of the thread, with one passage over the iron, the rapidity and ease of its action, uniformity of its work, simplicity and durability.

The arrangement of the dies is such, that as soon as they begin to cut, they will close as far as the stop will allow them, and the bolts will be cut the same size, any length.

As soon as the bolt is cut its required length, the dies are opened by the lever and the bolt taken out WITHOUT THE NECESSITY OF RUNNING BACK OFF THE THREAD.

The action of the dies is the same as a lathe tool, taking a clean chip which leaves the thread firm and strong.

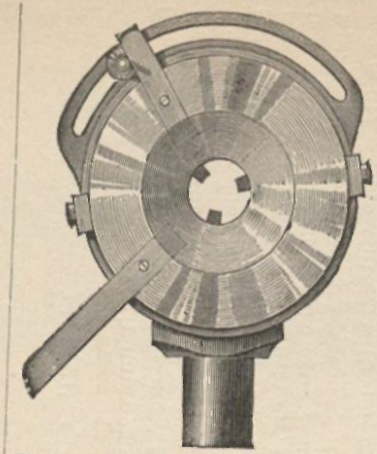
The dies can be sharpened by grinding. When too much worn, they can be taken out of the head, re-fitted, re-tempered and re-cut with master taps. In cutting short bolts, we furnish, when ordered, a plug socket, which is placed in the jaws, and which will admit the head of the bolt. In using the socket, it is not necessary to stop the machine to take out or re-place the bolt. One Socket will answer for all bolts, that will admit the head and not allow it to turn.

Besides the ordinary V shaped thread, the machine will cut coach screws, and square threads, double and single, such as vise, piano stool, letter-press and cider mill screws.

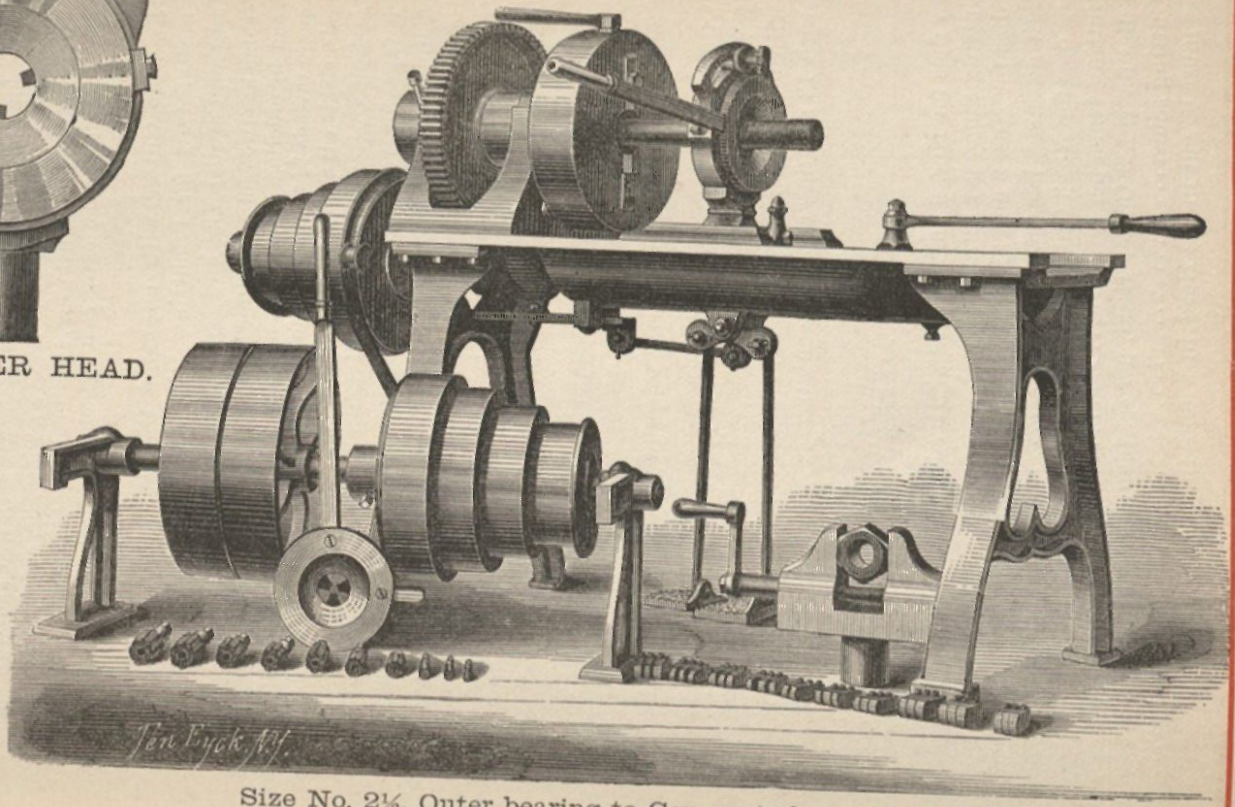
The machine will also tap nuts of corresponding sizes to bolts cut.

The cuts shown on next page, show the Bolt Cutter complete, and the Cutter Head; the latter can be attached to many machines in use, or to the ordinary lathe of about 16 to 20 inch swing. But we recommend the complete machine specially adapted to it.

☞ **Nut Taps are extra, and furnished at List Price. Also Plug Sockets.**



BOLT CUTTER HEAD.



Size No. 2½, Outer bearing to Cone not shown in cut.

BOLT CUTTERS.

No. 2.—Bolt Cutter with improved Chuck, including 8 sets dies, 8 master taps for re-cutting dies, Cone, Pulleys, Counter-Shaft, Hangers and Nut Holder,..... $400.00

The above Machine cuts V thread ⅜ to 1½ inches inclusive, and with an additional center to cutter head, so as to receive a wider die, and by ordering square dies which we furnish at list price, it will cut square threads ⅜ to 1¼ inches inclusive. Price of the extra center, including 3 sets dies, 3 master taps, $30.00.

No. 2½.—Bolt Cutter with improved Chuck, including 11 sets dies, 11 master taps for re-cutting Dies, Cone, Pulleys, Counter-Shaft, Hangers, Parallel Vise and Nut Holder,..... $500.00

This Machine has two centers to cutter head, and cuts V thread ⅜ to 2 inches inclusive, and by ordering square dies, which will be furnished at list price, will cut square threads ⅜ to 1½ inches inclusive, has back gear with seven different speeds, making it a very desirable tool.

No. 3.—Bolt Cutter with improved Chuck, including 9 sets dies, 9 master taps for re-cutting Dies, Cone, Pulleys, Counter-Shaft, Hangers, and Parallel Vise,..... $600.00

This size cuts V thread ¾ to 2¼ inches inclusive, with an extra center to cutter head, so as to receive a wider die; it will cut a V thread up to 3 inches, and by ordering square dies, which will be furnished at list price, will cut square thread up to 2¼ inches. Price of extra center, including 3 sets dies and 3 master taps, $125.00.

Nut Taps furnished at List Price.

CUTTER HEADS.

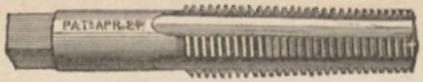
No. 2, with 8 sets dies,.....	$125.00
No. 2½, with 11 sets dies and two centers,.....	155.00
No. 3, with 9 sets dies,.....	175.00
No. 3, with 12 sets dies and two centers,.....	200.00

DIES.

Narrow dies for Nos. 2 and 2½ Cutter Heads, per set blank,.....	$1.50
Cutting same, per set,.....	.75
Wide dies for Nos. 2 and 2½ Cutter Heads, per set blank,.....	2.25
Cutting same, per set,.....	.75
Narrow dies for No. 3 Cutter Head, per set blank,.....	4.50
Cutting same, per set,.....	1.00
Wide dies for No. 3 Cutter Head, per set blank,.....	6.00
Cutting same,.....	1.50

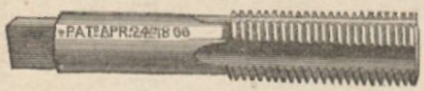
Dies must be cut in the Head in which they are to be used.

MACHINISTS' HAND TAPS.



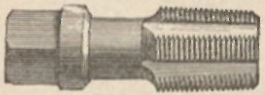
TAPER.

PLUG.



BOTTOMING.

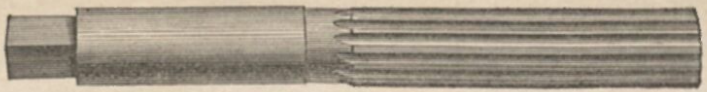
GAS AND STEAM FITTERS' TAPS.



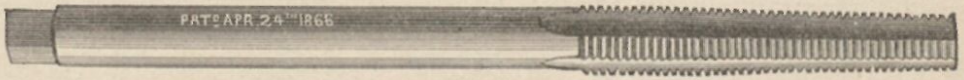
SHELL REAMERS.

BLACKSMITH TAPER TAPS.

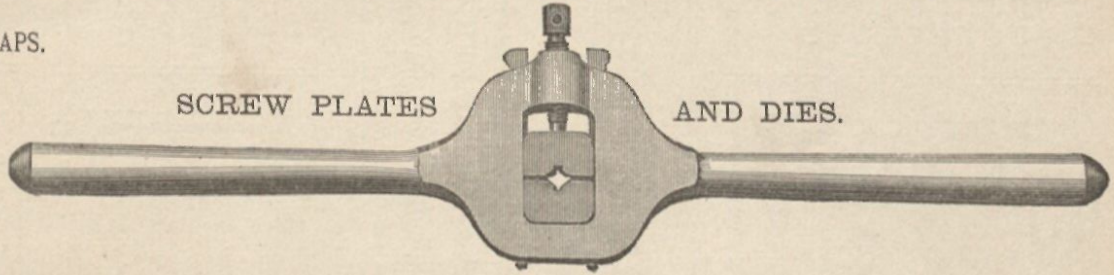
SOLID REAMERS.



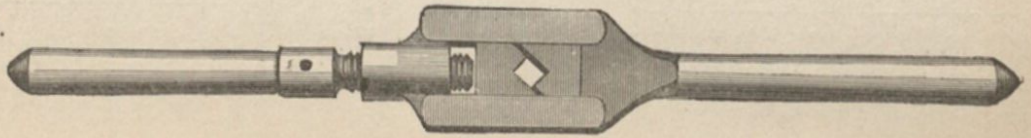
MACHINE OR NUT TAP.



SCREW PLATES AND DIES.



TAP WRENCHES.



MACHINE OR NUT TAPS.

LONG SHANK.

Diameter.	No. Threads to Inch.	Price Each.	Diameter.	No. Threads to Inch.	Price Each.
1/4 in.	20	$ .90	15/16 in.	9	$ 3.75
5/16 "	16 and 18	1.05	1 "	8	4.12
3/8 "	14 and 16	1.20	1 1/8 "	7 and 8	4.88
7/16 "	14 and 16	1.35	1 1/4 "	7	5.62
1/2 "	12, 13 and 14	1.65	1 3/8 "	6	6.38
9/16 "	12 and 14	1.95	1 1/2 "	6	7.75
5/8 "	10, 11 and 12	2.17	1 5/8 "	5	9.00
11/16 "	11 and 12	2.40	1 3/4 "	5	10.50
3/4 "	10	2.62	1 7/8 "	4 1/2	12.00
13/16 "	10	3.00	2 "	4 1/2	13.50
7/8 "	9 and 10	3.38			

We can furnish the above a 32d over size for Rough Iron.

Hubs furnished for cutting Solid Dies at 25 per cent. advance on Nut Tap.

BLACKSMITH TAPER TAPS.

Diameter.	No. Threads to Inch.	Price Each.	Diameter.	No. Threads to Inch.	Price Each.
1/4 in.	20	$ .60	15/16 in.	9	$2.50
5/16 "	16 and 18	.70	1 "	8	2.75
3/8 "	14 and 16	.80	1 1/8 "	7	3.25
7/16 "	14 and 16	.90	1 1/4 "	7	3.75
1/2 "	12 and 14	1.10	1 3/8 "	6	4.25
9/16 "	12 and 14	1.30	1 1/2 "	6	5.00
5/8 "	11 and 12	1.45	1 5/8 "	5	6.00
11/16 "	11 and 12	1.60	1 3/4 "	5	7.00
3/4 "	10	1.75	1 7/8 "	4 1/2	8.00
13/16 "	10	2.00	2 "	4 1/2	9.00
7/8 "	9	2.25			

MACHINISTS' VOLUTE HAND TAPS.

(BEE'S PATENT.)

SETS.	Diameter.	Number Threads to Inch.	Price Each.	Price per Set.
3 Taps to Set—Taper, Plug and Bottom,	1/4	20	$.60	$1.80
3 " " " " " "	5/16	10 and 18	.70	2.10
3 " " " " " "	3/8	14 and 16	.80	2.40
3 " " " " " "	7/16	14 and 16	.90	2.70
3 " " " " " "	1/2	12, 13 and 14	1.10	3.30
3 " " " " " "	9/16	12 and 14	1.30	3.90
3 " " " " " "	5/8	10, 11 and 12	1.45	4.35
3 " " " " " "	11/16	11 and 12	1.60	4.80
3 " " " " " "	3/4	10	1.75	5.25
3 " " " " " "	13/16	10	2.00	6.00
3 " " " " " "	7/8	9 and 10	2.25	6.75
3 " " " " " "	15/16	9	2.50	7.50
3 " " " " " "	1	8	2.75	8.25
3 " " " " " "	1 1/8	7 and 8	3.25	9.75
3 " " " " " "	1 1/4	7	3.75	11.25
3 " " " " " "	1 3/8	6	4.25	12.75
3 " " " " " "	1 1/2	6	5.00	15.00
3 " " " " " "	1 5/8	5	6.00	18.00
3 " " " " " "	1 3/4	5	7.00	21.00
3 " " " " " "	1 7/8	4 1/2	8.00	24.00
3 " " " " " "	2	4 1/2	9.00	27.00

We make the above a 32d over size, for Rough Iron.

GAS AND STEAM FITTERS' TAPS.

Diameter.	Price.	Diameter.	Price.	Diameter.	Price.
1/8 inch.....	$1.25	1/2 inch	$2.00	1 1/4 inch	$4.50
1/4 "	1.38	3/4 "	2.75	1 1/2 "	5.62
3/8 "	1.63	1 "	3.50	2 "	7.00

TAP WRENCHES.

Size A, fitting Taps from 1/4 to 5/8 inch diameter inclusive.....$3.00
Size B, " " " 1/2 to 1 " " " 4.00
Size C, " " " 7/8 to 1 1/4 " " " 5.00

SCREW PLATES AND DIES.

Size A 1 Screw Plate, 3 set Dies, 1/4 to 1/2 inch inclusive.....$5.00
Size B 1 " " 4 " " 3/8 to 3/4 " " 8.00
Size C 1 " " 4 " " 1/2 to 7/8 " " 10.00
Size D 1 " " 4 " " 7/8 to 1 1/4 " " 13.00

Single set of Dies for Plate A, $1.00 each; Plate B, $1.25 each; Plate C, $1.75 each; Plate D, $2.00 each.

SOLID REAMERS.

Diameter.	Length of Solid Reamers.	Length of Flutes of Solid Reamers.	Price of Solid Reamers.
$\frac{1}{4}$ inch.	$3\frac{3}{16}$ inches.	$1\frac{9}{16}$ inches.	$1.00
$\frac{5}{16}$ "	$3\frac{11}{16}$ "	$1\frac{13}{16}$ "	1.25
$\frac{3}{8}$ "	$4\frac{5}{16}$ "	$2\frac{1}{8}$ "	1.50
$\frac{7}{16}$ "	$4\frac{15}{16}$ "	$2\frac{7}{16}$ "	1.75
$\frac{1}{2}$ "	$5\frac{5}{8}$ "	$2\frac{3}{4}$ "	2.00
$\frac{9}{16}$ "	$6\frac{5}{16}$ "	$3\frac{1}{8}$ "	2.25
$\frac{5}{8}$ "	7 "	$3\frac{1}{2}$ "	2.50
$\frac{11}{16}$ "	$7\frac{11}{16}$ "	$3\frac{13}{16}$ "	2.75
$\frac{3}{4}$ "	$8\frac{3}{4}$ "	$4\frac{1}{8}$ "	3.00
$\frac{13}{16}$ "	$9\frac{1}{16}$ "	$4\frac{1}{2}$ "	3.25
$\frac{7}{8}$ "	$9\frac{11}{16}$ "	$4\frac{13}{16}$ "	3.50
$\frac{15}{16}$ "	$10\frac{1}{4}$ "	$5\frac{1}{8}$ "	3.75
1 "	$10\frac{7}{8}$ "	$5\frac{7}{16}$ "	4.00
$1\frac{1}{16}$ "	$11\frac{3}{8}$ "	$5\frac{11}{16}$ "	4.50
$1\frac{1}{8}$ "	$11\frac{7}{8}$ "	$5\frac{15}{16}$ "	5.00
$1\frac{3}{16}$ "	$12\frac{1}{4}$ "	$6\frac{1}{8}$ "	5.50
$1\frac{1}{4}$ "	$12\frac{1}{2}$ "	$6\frac{1}{4}$ "	6.00
$1\frac{5}{16}$ "	$12\frac{5}{8}$ "	$6\frac{5}{16}$ "	6.50
$1\frac{3}{8}$ "	$12\frac{5}{8}$ "	$6\frac{5}{16}$ "	7.00
$1\frac{7}{16}$ "	$12\frac{5}{8}$ "	$6\frac{5}{16}$ "	7.50
$1\frac{1}{2}$ "	$12\frac{5}{8}$ "	$6\frac{5}{16}$ "	8.00
$1\frac{9}{16}$ "	$12\frac{5}{8}$ "	$6\frac{5}{16}$ "	8.75
$1\frac{5}{8}$ "	$12\frac{5}{8}$ "	$6\frac{5}{16}$ "	9.50
$1\frac{11}{16}$ "	$12\frac{5}{8}$ "	$6\frac{5}{16}$ "	10.50
$1\frac{3}{4}$ "	$12\frac{5}{8}$ "	$6\frac{5}{16}$ "	11.50
$1\frac{13}{16}$ "	$12\frac{5}{8}$ "	$6\frac{5}{16}$ "	12.75
$1\frac{7}{8}$ "	$12\frac{5}{8}$ "	$6\frac{5}{16}$ "	14.00
$1\frac{15}{16}$ "	$12\frac{5}{8}$ "	$6\frac{5}{16}$ "	15.50
2 "	$12\frac{5}{8}$ "	$6\frac{5}{16}$ "	17.00

We make the above by 32ds if ordered. Square Thread Taps 25 per cent. additional.

SHELL REAMERS.

Length.	Price.	Length.	Price.	Length.	Price.
2 inches.....	$1.50	3 inches.....	$2.00	$3\frac{1}{2}$ inches.....	$4.75
2 "	1.50	3 "	2.25	$3\frac{1}{2}$ "	5.50
2 "	1.50	3 "	2.50	$3\frac{1}{2}$ "	6.50
2 "	1.50	3 "	2.75	$3\frac{1}{2}$ "	7.50
$2\frac{1}{2}$ "	1.75	3 "	3.00	$3\frac{1}{2}$ "	8.75
$2\frac{1}{2}$ "	1.75	3 "	3.25	$3\frac{1}{2}$ "	10.00
$2\frac{1}{2}$ "	1.75	$3\frac{1}{2}$ "	3.50	$3\frac{1}{2}$ "	11.50
$2\frac{1}{2}$ "	1.75	$3\frac{1}{2}$ "	4.00		

The following is the Philadelphia Standard for

SCREW THREADS FOR BOLTS AND NUTS,

As Adopted by the Franklin Institute in 1864.

Diam. of Bolt.	Threads. No.	Diam. of Bolt.	Threads. No.	Diam. of Bolt.	Threads. No.	Diam. of Bolt.	Threads. No.	Diam. of Bolt.	Threads. No.
1/4 in.	20	3/4 in.	10	1 5/8 in.	5 1/2	3 in.	3 1/2	4 3/4 in.	2 5/8
5/16 "	18	7/8 "	9	1 3/4 "	5	3 1/4 "	3 1/2	5 "	2 1/2
3/8 "	16	1 "	8	1 7/8 "	5	3 1/2 "	3 1/4	5 1/4 "	2 1/2
7/16 "	14	1 1/8 "	7	2 "	4 1/2	3 3/4 "	3	5 1/2 "	2 3/8
1/2 "	13	1 1/4 "	7	2 1/4 "	4 1/2	4 "	3	5 3/4 "	2 3/8
9/16 "	12	1 3/8 "	6	2 1/2 "	4	4 1/4 "	2 7/8	6 "	2 1/4
5/8 "	11	1 1/2 "	6	2 3/4 "	4	4 1/2 "	2 3/4		

MASTER TAPS FOR SCHLENKER BOLT CUTTER.

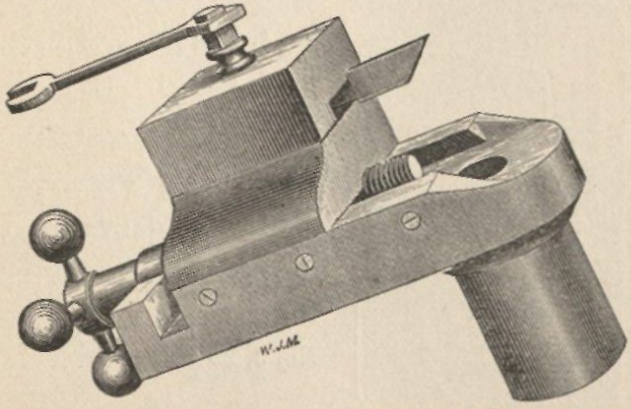
Size.	Price of Each.	Size.	Price of Each.	Size.	Price of Each.
1/4 inch.	$1.60	5/8 inch.	$2.20	1 3/8 inch.	$4.00
5/16 "	1.60	3/4 "	2.40	1 1/2 "	4.50
3/8 "	1.90	7/8 "	2.60	1 5/8 "	5.25
7/16 "	1.90	1 "	2.90	1 3/4 "	6.25
1/2 "	2.00	1 1/8 "	3.20	1 7/8 "	7.75
9/16 "	2.00	1 1/4 "	3.60	2 "	9.75

The Shank of Plug Taps will give size of hole to drill; the Collar, the size of the Tap.

Twenty-five per cent. added on all *square thread* Taps and Dies.

Parties ordering will please state the THREAD wanted.

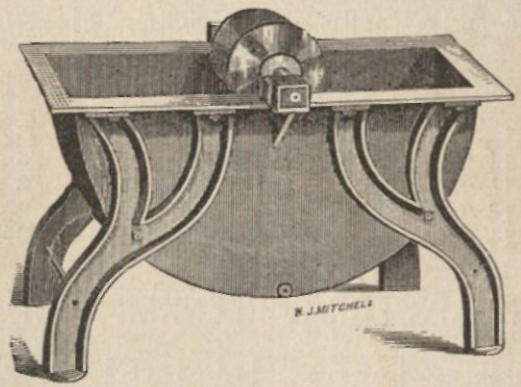
CUTTING OFF ATTACHMENT.



TO BE APPLIED TO THE SCHLENKER BOLT CUTTER.

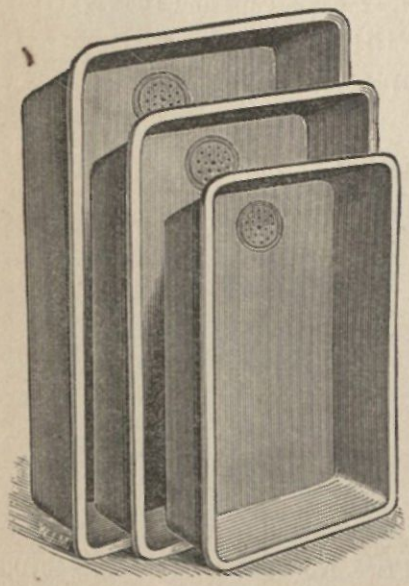
Price, No. 1..... $35.00 Price, No. 2..... $40.00

GRINDSTONE FRAMES.



No. 1, take stone 4 in. face, 30 in. diameter,..... $30.00
No. 2, take stone 5 in. face, 42 in. diameter,..... 40.00
No. 3, take stone 8 in. face, 52 in. diameter,..... 65.00

CAST IRON SINKS.



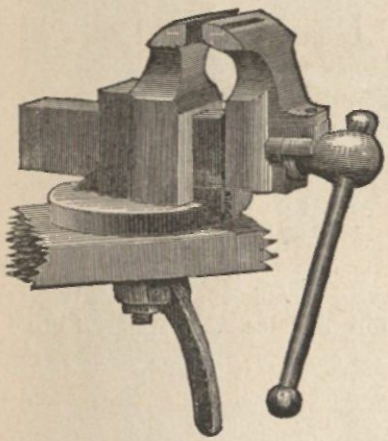
IRON.

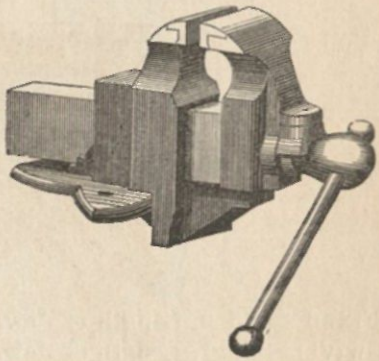
No. 1, 16×26..... $.....
No. 2, 18×30..... $.....
No. 3, 20×36..... $.....

GALVANIZED.

No. 1, 16×26..... $.....
No. 2, 18×30..... $.....
No. 3, 20×36..... $.....

HOWARD PARALLEL BENCH VISE.





FIXED.

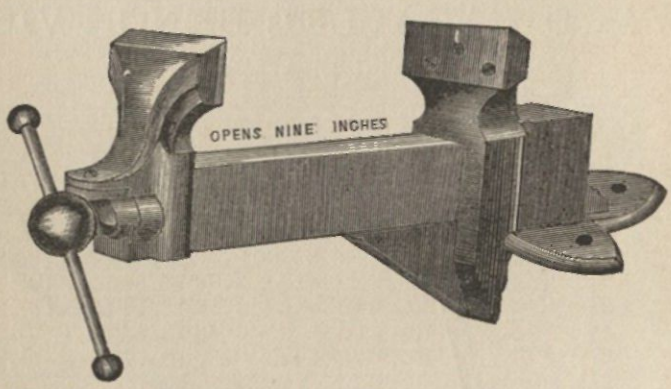
No. 0,	Length of Jaw	3	in.,	weight	23	lbs.,	.....	$5.50
No. 1,	" "	3½	"	"	31½	"	.....	6.50
No. 2,	" "	4	"	"	39	"	.....	8.50
No. 3,	" "	4½	"	"	50	"	.....	10.75
No. 4,	" "	5	"	"	90	"	.....	16.00
No. 5,	" "	6	"	.....				23.75
No. 6,	" "	7	"	.....				34.50

SWIVEL.

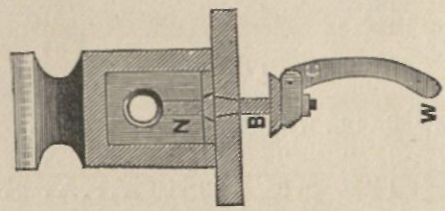
No. 00,	Length of Jaw	2	in.,	weight	7½	lbs.,	.....	$4.00
No. 0,	" "	3	"	"	29	"	.....	6.25
No. 1,	" "	3½	"	"	38½	"	.....	8.00
No. 2,	" "	4	"	"	48	"	.....	10.00
No. 3,	" "	4½	"	"	61	"	.....	13.25
No. 4,	" "	5	"	"		"	.....	16.50
No. 5,	" "	6	"	"	129	"	.....	26.00
No. 6,	" "	7	"	"	188	"	.....	36.00

Boxing and Cartage Extra.

HOWARD COACHMAKER'S VISE.



FIXED —No. 2, Length of Jaw, 4 in., Weight, 37½ lbs.....$10.00
SWIVEL—No. 1, Length of Jaw, 4 in..... 12.50



EXPLANATIONS.

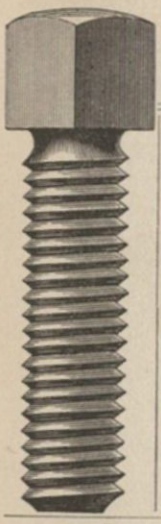
The style is acknowledged to be excellent. The malleable cast iron nut is rendered *immovable* by being set in the molten iron, thereby doubling the durability of both nut and screw, for they are saved from the destructive grinding, cutting and bending action of the cross-strain, which has always been a great evil heretofore.

Another improvement is the chilling of those parts of the slide sheath that come in contact with the slide, thereby avoiding much friction in its movements.

These improvements apply to all of my Vises; but additional and great improvements have been made in the *Swivel Vise*, which, in the opinion of many, must result in its being the favorite for all uses. There is great strength in its circular base, so that its side parts may be employed for light anvil uses, which is often convenient. In the center of this base, as seen in fig. 3, is set, at the time of its being cast, the strong bolt, **B**; the nut of this bolt, under the bench, is brought to its desired position on the bolt by the cam wrench, **C, W**; the handle, **W**, is now forced down, and the cam, acting upon the short lever between the nut and washer, exerts its very great and *duplicated* power in holding the Vise securely. So firmly does it hold it, that the combined force of several men exerted upon the Vise cannot move it from its position. And yet so convenient is the little machine that this great power is instantly removed and applied.

The seat of the swivel is slightly concave, so that it shall rest upon the circumference of its base. Let it be observed that the nut of the bolt, **B**, is not turned in the least when the strain is upon it, and so the thread is saved from wear. The bolt is so formed and set that it cannot be drawn from the casting.

Boxing and Cartage Extra.



STEEL SET SCREWS.

TEMPERED.

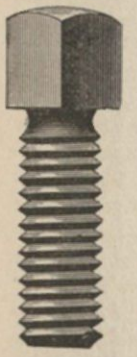
SIZE.	¼	5/16	⅜	7/16	½	9/16	⅝	¾
¾ inch...	5.70	6.10	6.50	8.00	10.00	12.50	16.00	22.75
1 " ...	6.00	6.40	6.80	8.30	10.30	12.90	16.60	23.50
1¼ " ...	6.30	6.70	7.10	8.60	10.60	13.30	17.20	24.25
1½ " ...	6.60	7.00	7.40	8.90	10.90	13.70	17.80	25.50
1¾ " ...	6.90	7.40	7.70	9.20	11.20	14.10	18.20	26.25
2 " ...	7.20	7.80	8.00	9.50	11.50	14.50	18.80	27.00
2¼ " ...	7.50	8.20	8.30	9.80	11.80	14.90	19.40	27.75
2½ " ...	7.80	8.60	8.60	10.10	12.10	15.30	20.00	28.50
2¾ " ...	8.10	8.90	8.90	10.40	12.40	15.70	20.60	29.25
3 " ...	8.40	9.20	9.20	10.70	12.70	16.10	21.20	30.00
No. Threads.	24	20	16	14	12 and 13	12	11 and 12	10

N. B.—We keep on hand all our standard sizes with cupped points only. Oval or conical points made as ordered.

Lengths given under head to point.

IRON SET SCREWS.

CASE HARDENED.—PER 100.

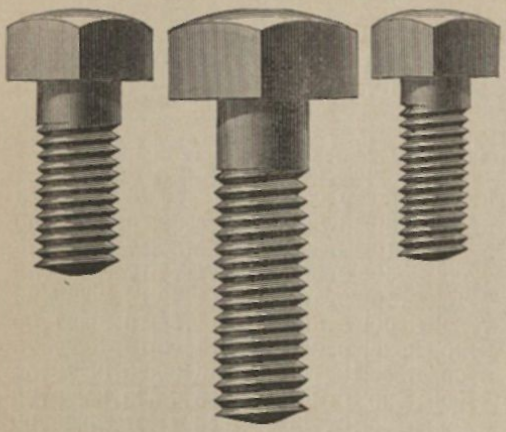


SIZE.	¼	5/16	⅜	7/16	½	9/16	⅝	¾
¾ inch...	2.60	3.05	3.25	4.00	5.00	6.25	8.00	11.35
1 " ...	3.00	3.20	3.40	4.15	5.15	6.45	8.30	11.75
1¼ " ...	3.15	3.35	3.55	4.30	5.30	6.65	8.60	12.10
1½ " ...	3.30	3.50	3.70	4.45	5.45	6.85	8.90	12.75
1¾ " ...	3.45	3.70	3.85	4.60	5.60	7.05	9.10	13.10
2 " ...	3.60	3.90	4.00	4.75	5.75	7.25	9.40	13.50
2¼ " ...		4.10	4.15	4.90	5.90	7.45	9.70	13.85
2½ " ...			4.30	5.05	6.05	7.65	10.00	14.25
2¾ " ...				5.20	6.20	7.85	10.30	14.65
3 " ...					6.35	8.05	10.60	15.00
No. Threads.	24	20	16	14	12 and 13	12	11 and 12	10

Iron Set Screws of standard sizes usually kept on hand with both cupped and oval points.

N. B.—Please state when ordering, whether cupped or oval points.

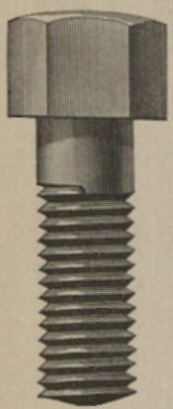
Lengths given under head to point.



MACHINE OR CAP SCREWS.

SQUARE HEAD.

In.	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8
3/4	$3.12	$3.50	$4.00	$4.75	$5.75	$7.00	$9.00	$13.00	
1	3.50	3.75	4.25	5.00	6.00	7.25	9.50	13.75	
1 1/4		4.00	4.50	5.25	6.25	7.75	10.50	14.50	
1 1/2			4.75	5.50	6.50	8.25	11.00	15.25	
1 3/4				5.75	6.75	8.75	12.00	16.00	
2				6.00	7.00	9.25	13.00	16.75	
2 1/4						10.00	14.00	17.50	
2 1/2						10.50	15.00	18.25	
2 3/4							16.00	19.00	
3							17.00	20.00	
No. threads.	24	20	16	14	12 and 13	12	11 and 12	10	



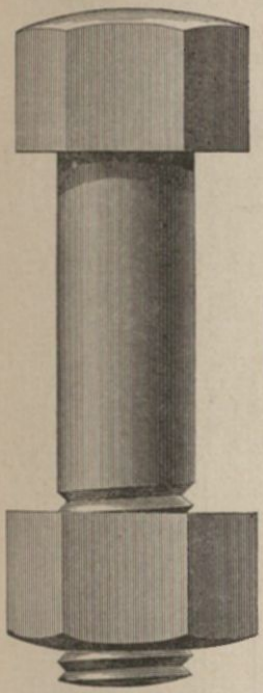
HEXAGON HEAD.

In.	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4
3/4		5.00	5.30	6.00	7.00				
1		5.35	5.70	6.50	7.50	9.00			
1 1/4		5.75	6.10	7.00	8.25	9.75	11.00	13.00	18.12
1 1/2				7.50	9.00	10.50	12.00	13.75	19.00
1 3/4				8.00	9.75	12.00	13.00	15.00	20.00
2				8.50	10.50	13.50	14.00	16.25	21.00
2 1/4								17.25	21.88
2 1/2								18.75	22.80
2 3/4								20.00	23.75
3								21.25	25.00

N. B.—Finished heads of Square or Hexagon Head. Cap Screws, 15 per cent more.

N. B.—We wish to call the attention of Machine manufacturers to our unrivaled Machine Screws, made from a superior quality of Iron, and cut to standard Gauges.

COUPLING BOLTS.



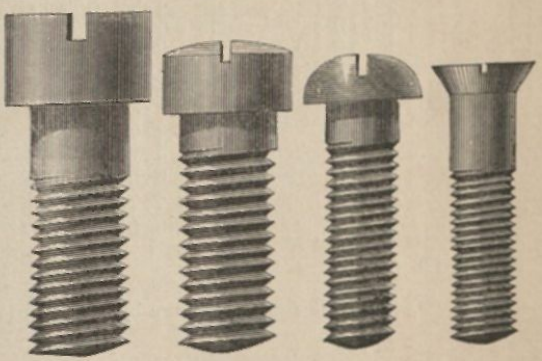
Diam.	Length.	Price.	Diam.	Length.	Price.
$\frac{5}{8}$ in.	$2\frac{1}{2}$ in.	$ .22	$\frac{3}{4}$ in.	$3\frac{1}{2}$ in.	$ .32
	3 "	.25	1 "	3 "	.60
$\frac{3}{4}$ "	3 "	.30		$3\frac{1}{2}$ "	.63

Finished Heads and Case Hardened Nuts, 20 per cent. extra.

STEEL DOG SCREWS.

Ten per cent. advance from List of Steel Set Screws.

MACHINE OR CAP SCREWS.

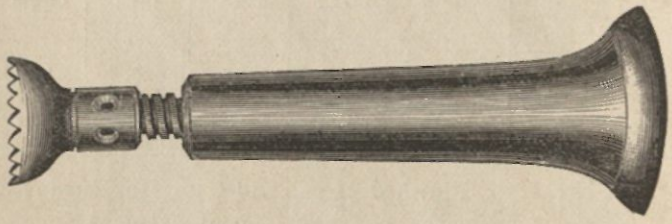


ROUND HEAD.—Per 100.

Size.	$\frac{3}{16}$ in.	$\frac{1}{4}$ in.	$\frac{5}{16}$ in.	$\frac{3}{8}$ in.	$\frac{7}{16}$ in.	$\frac{1}{2}$ in.	$\frac{9}{16}$ in.	$\frac{5}{8}$ in.	$\frac{3}{4}$ in.
$\frac{3}{4}$ in.	$3.75	$4.50	$5.25						
$\frac{7}{8}$ "	4.00	4.75	5.75	$7.00					
1 "	4.25	5.00	6.25	7.50	$ 8.00				
$1\frac{1}{4}$ "		5.50	7.00	8.00	9.00	$10.00	$12.00		
$1\frac{1}{2}$ "		6.00	7.50	9.00	10.00	11.00	13.00	$14.00	$17.00
$1\frac{3}{4}$ "					11.00	12.00	14.00	15.50	18.50
2 "					12.00	13.00	15.50	17.00	20.00
$2\frac{1}{4}$ "							17.00	18.50	21.50
$2\frac{1}{2}$ "							18.50	20.00	23.00
$2\frac{3}{4}$ "									24.00
3 "									25.00

JACK SCREWS.

BELL BOTTOM.

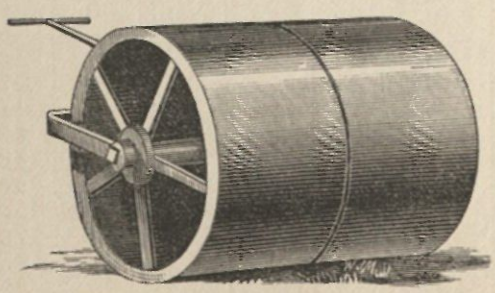


Diameter.	Length of Iron Barrel.	Price.	Diameter.	Length of Iron Barrel.	Price.
1¼ inches.	6 inches.	$ 3.50	2 inches.	16 inches.	$ 9.50
1¼ "	8 "	4.00	2 "	20 "	10.50
1½ "	6 "	4.00	2 "	24 "	13.50
1½ "	8 "	4.75	2¼ "	8 "	8.75
1½ "	10 "	5.00	2¼ "	10 "	9.50
1½ "	12 "	5.50	2¼ "	12 "	10.00
1¾ "	6 "	4.50	2¼ "	14 "	10.50
1¾ "	8 "	5.00	*2¼ "	16 "	12.00
1¾ "	10 "	5.50	*2¼ "	20 "	13.50
1¾ "	12 "	6.00	*2¼ "	24 "	16.00
1¾ "	14 "	6.50	*2½ "	8 "	10.00
1¾ "	16 "	8.00	*2½ "	10 "	10.75
2 "	6 "	5.50	*2½ "	12 "	11.50
2 "	8 "	5.75	*2½ "	14 "	12.00
2 "	10 "	6.50	*2½ "	16 "	12.75
2 "	12 "	7.75	*2½ "	20 "	14.75
2 "	14 "	8.00	*2½ "	24 "	17.50

Handles extra.

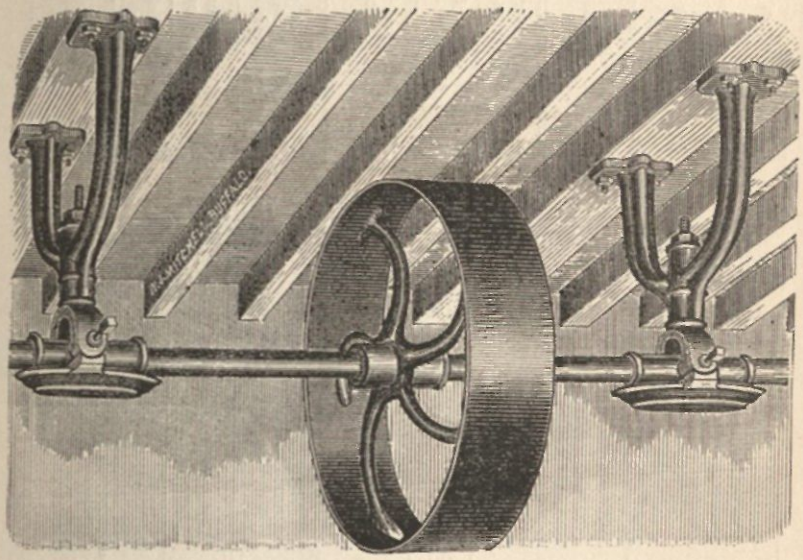
NOTE.—The sizes designated above by a star thus (*2¼) are adapted for Locomotives.

LAWN AND FIELD ROLLERS.



We make these from 12 to 48 inches diameter, and any desired width.

PULLEYS.



Diameter in Inches.	Width of Belt.	Price Straight Face.	Price Convex Face.	Diameter in Inches.	Width of Belt.	Price Straight Face.	Price Convex Face.	Diameter in Inches.	Width of Belt.	Price Straight Face.	Price Convex Face.
8	4			14	4			18	18		
	5				5			20	4		
	6				6				6		
	7				7				8		
	8				8				10		
	9				10				12		
	10				12				14		
10	4				14				16		
	5			16	4				18		
	6				5				20		
	7				6			22	4		
	8				7				6		
	9				8				8		
	10				10				10		
	11				12				12		
	12				14				14		
12	4				16				16		
	5			18	4				18		
	6				6				20		
	7				8			24	4		
	8				10				6		
	10				12				8		
	12				14				10		
	14				16				12		

PULLEYS—Continued.

Diameter in Inches.	Width of Belt.	Price Straight Face.	Price Convex Face.	Diameter in Inches.	Width of Belt.	Price Straight Face.	Price Convex Face.	Diameter in Inches.	Width of Belt.	Price Straight Face.	Price Convex Face.
24	14			34	20			44	24		
	16				22			46	8		
	18			36	6				10		
	20				8				12		
26	4				10				14		
	6				12				16		
	8				14				18		
	10				16				20		
	12				18				22		
	14				20				24		
	16				22			48	8		
	18			38	6				10		
	20				8				12		
28	4				10				14		
	6				12				16		
	8				14				18		
	10				16				20		
	12				18				22		
	14				20				24		
	16				22				26		
	18				24				28		
	20			40	8				30		
30	4				10			54	8		
	6				12				10		
	8				14				12		
	10				16				14		
	12				18				16		
	14				20				18		
	16				22				20		
	18				24				22		
	20			42	8				24		
32	4				10				26		
	6				12				28		
	8				14				30		
	10				16			60	8		
	12				18				10		
	14				20				12		
	16				22				14		
	18				24				16		
	20			44	8				18		
34	6				10				20		
	8				12				22		
	10				14				24		
	12				16				26		
	14				18				28		
	16				20				30		
	18				22				32		

PULLEYS—Continued.

Diameter in Inches.	Width of Belt.	Price Straight Face.	Price Convex Face.	Diameter in Inches.	Width of Belt.	Price Straight Face.	Price Convex Face.	Diameter in Inches.	Width of Belt.	Price Straight Face.	Price Convex Face.
60	34			66	26			72	18		
	36				28				20		
66	10				30				22		
	12				32				24		
	14				34				26		
	16				36				28		
	18			72	10				30		
	20				12				32		
	22				14				34		
	24				16				36		

All of these Pulleys can be made with two or one set of arms.

LOOSE COLLARS,

WITH SET SCREWS.

Diameter.	Price.	Diameter.	Price.
1 inch Collar,	$ .62	$2\frac{3}{8}$ inch Collar,	$2.22
$1\frac{1}{8}$ " "	.64	$2\frac{1}{2}$ " "	2.41
$1\frac{1}{4}$ " "	.69	$2\frac{5}{8}$ " "	2.68
$1\frac{3}{8}$ " "	.75	$2\frac{3}{4}$ " "	2.84
$1\frac{1}{2}$ " "	.84	$2\frac{7}{8}$ " "	2.96
$1\frac{5}{8}$ " "	.98	3 " "	3.24
$1\frac{3}{4}$ " "	1.18	$3\frac{1}{4}$ " "	3.45
$1\frac{7}{8}$ " "	1.40	$3\frac{1}{2}$ " "	3.78
2 " "	1.66	$3\frac{3}{4}$ " "	4.15
$2\frac{1}{8}$ " "	1.82	4 " "	4.68
$2\frac{1}{4}$ " "	2.00		

COUNTER SHAFT HANGER,

WITH IRON SHIPPER ARM AND OIL DISH.

Size of Shaft to take in.	Length of Iron Box.	Drop, in Inches.	Spread of Leg.	Price.	Lbs.
$1\frac{1}{8}$	4	11	15		
$1\frac{1}{4}$	5	11	20		
$1\frac{1}{2}$	6	11	20		
$1\frac{3}{4}$	7	11	20		
$1\frac{1}{4}$	5	14	23		
$1\frac{1}{2}$	6	14	23		
$1\frac{3}{4}$	7	14	23		

The above Hangers are solid Pipe Boxes.

UNIVERSAL DROP HANGER.

WITH OIL DISH.

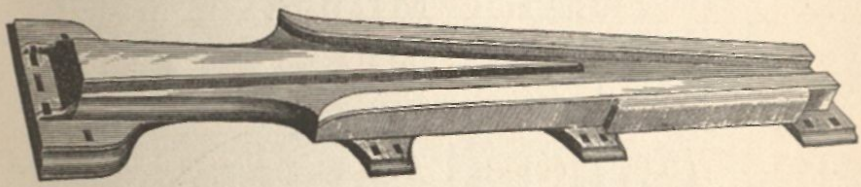
Size of Shaft to take in.	Length of Iron Box.	Drop, in Inches.	Spread of Legs.	Price.	Pounds.
1½ inch.	7 inch.	16½ inch.	22 inch.		
1¾ "	8 "	16½ "	22 "		
2 "	8 "	16½ "	22 "		
2¼ "	9 "	16½ "	22 "		
2½ "	10 "	16½ "	22 "		
1½ "	7 "	21½ "	24 "		
1¾ "	8 "	21½ "	24 "		
2 "	8 "	21½ "	24 "		
2¼ "	9 "	21½ "	24 "		
2½ "	10 "	21½ "	24 "		

The above Hangers are Solid Pipe Boxes.

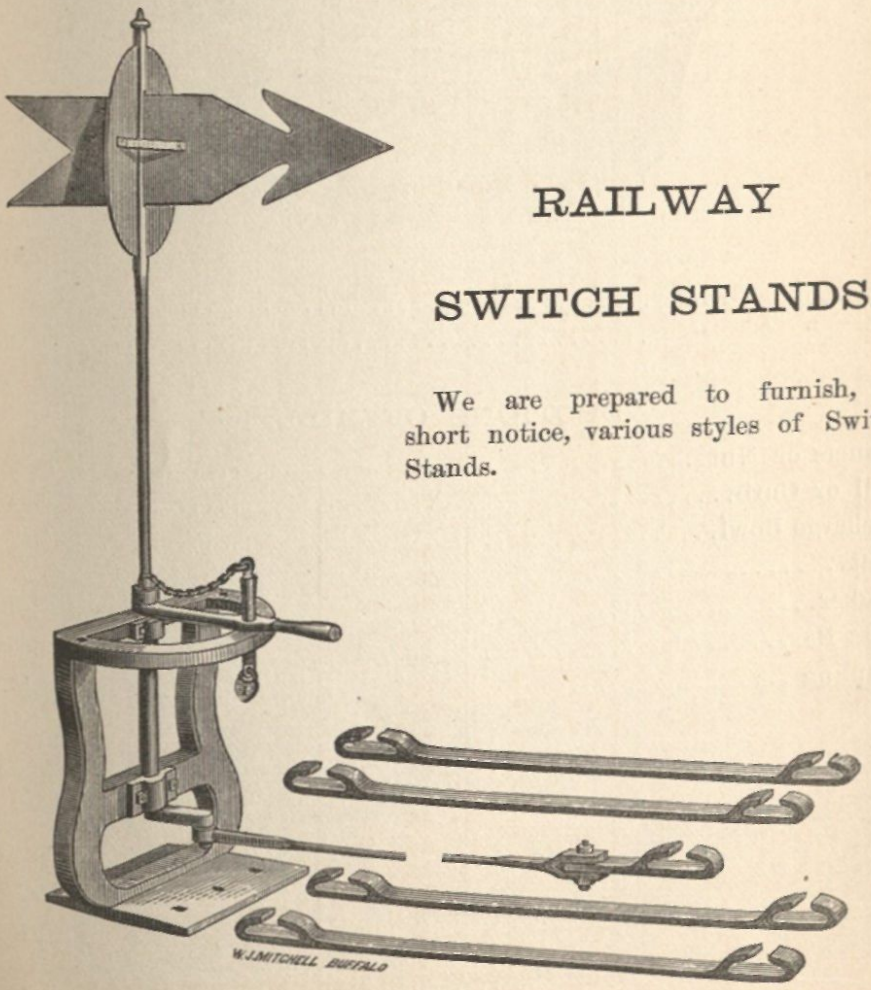
2 inch.	8 inch.	22½ inch.	24 inch.		
2¼ "	9 "	22½ "	24 "		
2½ "	10 "	22½ "	25 "		
2 "	8 "	22½ "	25 "		
2¼ "	9 "	22½ "	25 "		
2½ "	10 "	22½ "	25 "		
2¾ "	11 "	22½ "	25 "		
3 "	12 "	22½ "	25 "		
3¼ "	13 "	22½ "	25 "		
3½ "	14 "	22½ "	25 "		
2 "	8 "	28 "	30 "		
2¼ "	9 "	28 "	30 "		
2½ "	10 "	28 "	30 "		
2¾ "	11 "	28 "	30 "		
3 "	12 "	28 "	30 "		
3¼ "	13 "	28 "	30 "		
3½ "	14 "	28 "	30 "		
2 "	8 "	37 "	44 "		
2¼ "	9 "	37 "	44 "		
2½ "	10 "	37 "	44 "		
2¾ "	11 "	37 "	44 "		
3 "	12 "	37 "	44 "		
3¼ "	13 "	37 "	44 "		
3½ "	14 "	37 "	44 "		

All of the above Hangers are made with Half Boxes and Oil Dish.

RAILWAY FROGS.



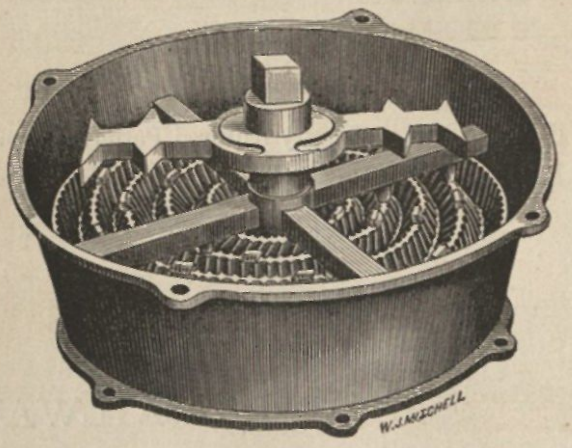
Railway and Crossing Frogs of every required Pattern or Angle.



RAILWAY SWITCH STANDS.

We are prepared to furnish, at short notice, various styles of Switch Stands.

BARK MILLS.



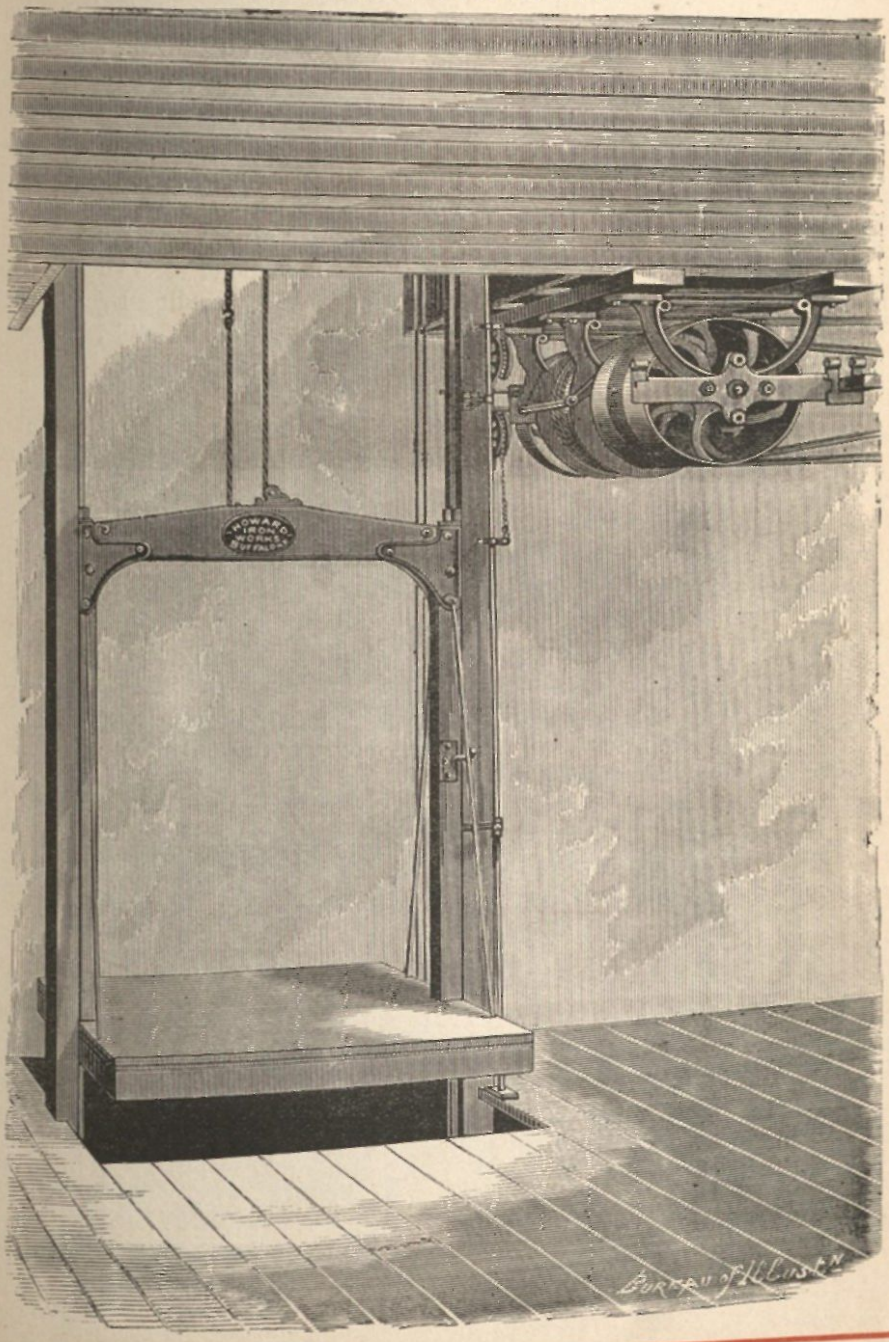
Bark Mill, 6 Grinder	$40.00
" " 4 "	35.00

SECTIONS OF MILL.

Runners or Nut	$13.00
Shell or Curb	20.00
Discharge Bowl	4.50
Shaft	5.50
Breaker	1.50
Cross Bar	2.50
Coupling	.50

BUFFALO POWER HOISTING MACHINE.

WITH SAFETY ATTACHMENT.



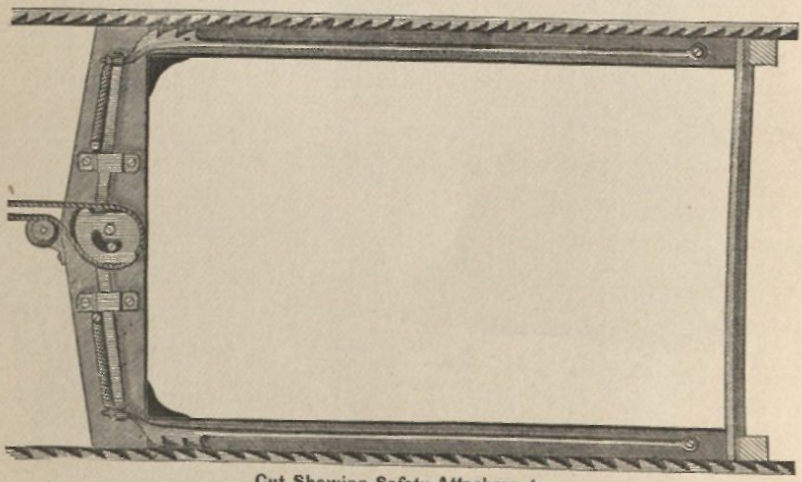
BUFFALO POWER HOISTING MACHINE.

The Buffalo Gear Power Hoisting Machine, manufactured by us, has an internal gear, and a perfect safety attachment, so arranged as to avoid any possibility of accident. It is simple in its construction and any one can operate it. For cheapness, great economy in using, the saving of labor and the speed of elevating goods, it is unequaled in the market.

The Buffalo Screw Hoisting Machines are made so as to secure the least possible wear as well as perfect safety. The Worm Wheel is cast upon a chill, the same as a car wheel, and the screw is made of steel and hardened and all inclosed in cast iron air-tight casings. The Winding Drum is made of hard wood and covered with leather to protect the wire cable. Taken as a whole it is a very perfect, durable, simple and cheap Elevator.

All of our machines are made with Olmsted's Patented Lubricating method, of which we are sole owners for Hoisting Machines. This invention consists in using a hollow steel shaft with apertures open from the interior to the exterior at the places where the loose pulleys revolve, and where the boxes are placed for the shaft to revolve in, which apertures are closed with leather through which the oil which is placed inside the shaft penetrates sufficiently to keep the bearings lubricated. This principle of lubricating has been applied to nearly all kinds of machinery, and has proved perfectly reliable in all cases, including Woodworth's Planers, Saw Mandrels, Fan Blowers and Eccentrics, Crank Pins, Cross Heads and Shafts for Steam Engines.

We, and many others, consider this method the only safe and reliable Lubricator for loose pulleys.



Cut Showing Safety Attachment.

PRICE LIST OF

POWER HOISTING MACHINES.

No. 1, Howard Elevator "Gear Power," with Safety Attachment. Capacity 5,000 lbs., Guide Ways 40 feet..... $975 00
Five dollars per lineal foot added or deducted for any more or less than 40 feet.

No. 2, Howard Elevator "Gear Power," with Safety Attachment. Capacity 3,000 lbs., Guide Ways 40 feet..... 675 00
Four dollars per lineal foot added or deducted for any more or less than 40 feet.

No. 3, Howard Elevator, "Screw Power," with Safety Attachment. Capacity 2,000 lbs., Guide Ways 40 feet..... 575 00
Four dollars per lineal foot added or deducted for any more or less than 40 feet.

No. 4, Howard Elevator "Screw Power," with Safety Attachment. Capacity 4,000 lbs., Guide Ways 40 feet..... 825 00
Five dollars per lineal foot added or deducted for any more or less than 40 feet.

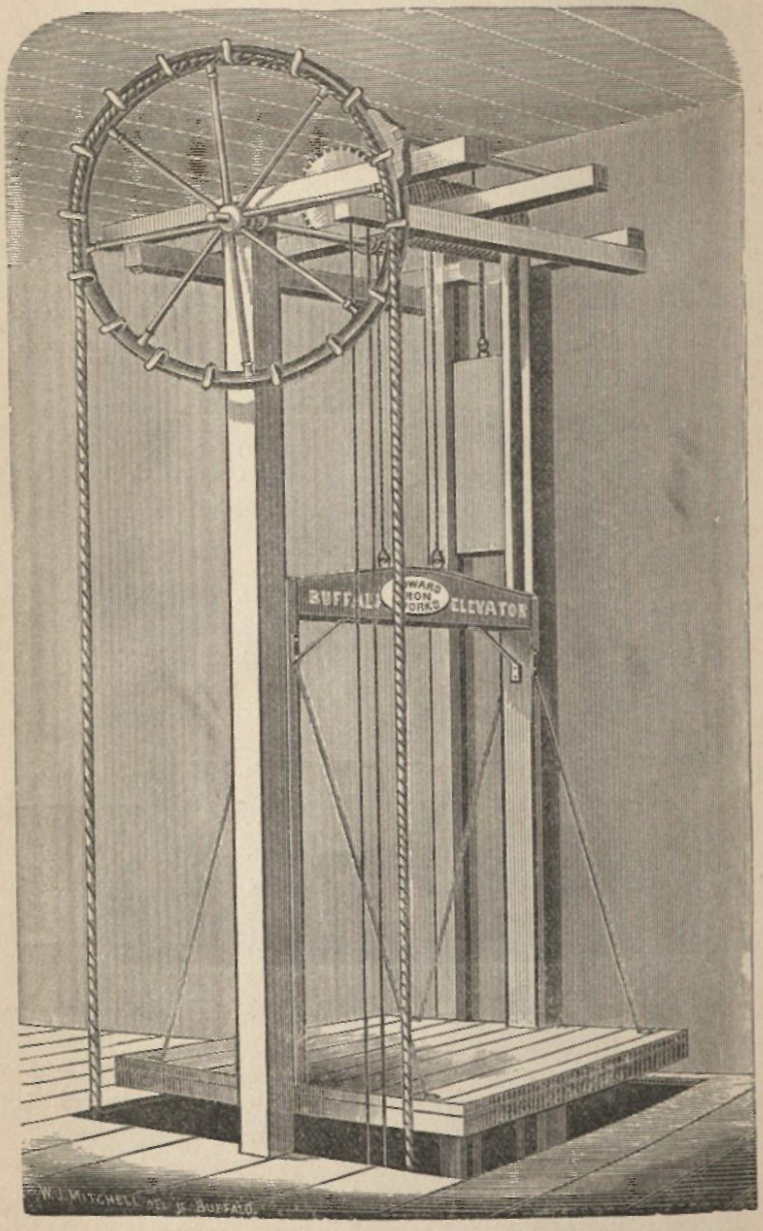
PRICES AT BUFFALO.

Counter Shafts, Belting and Pulley on Line Shaft furnished at reasonable rates.

Men furnished to assist in putting up Elevators, if desired, time and expense to be paid by purchaser.

HOWARD ELEVATOR.

HAND POWER.



With Anti-Friction Rollers, Two Wire Lifting Ropes, Cut Gearing.

BUFFALO HAND HOISTING MACHINE.

The Hand Hoisting Machines of our manufacture, are a handsome addition to fine finished buildings, and are adapted for general merchandise. The machines are so arranged that they can be checked, made fast, or loose at any desired place; is entirely at the will of the operator, and will be found equal to any Hand Hoisting Machines in use. Being simple and perfect in construction it is not liable to get out of order.

All of our Hand Hoists are provided with patent anti-friction rollers, and require no oil.

PRICE LIST OF HAND HOISTING MACHINES.

No. 1, Buffalo Sling Hoisting Machine, at Works	$80.00
This machine is suitable for out door or in door.	
No. 2, Buffalo Hand Hoisting Machine and Platform for 2 Manilla Lifting Ropes and 2 Counter Weights	175.00
Lifting and Hand Rope, per running foot	1.00
No. 3, Hand Hoisting and Platform and 1 Counter Weight for Wire Rope	250.00
Lifting and Hand Rope, per running foot	1.00
No. 4, Hand Hoisting and Platform with Safety Attachment and 2 Counter Weights	300.00
Wire Lifting and Manilla Hand Rope, per running foot	1.25
Safety Ratchets, per lineal foot	.70

Prices at Buffalo.

DIRECTIONS.

When ordering any of these Platform Machines, please send GROUND PLAN of Store, showing the location of hatchway, etc.—a rough sketch will suffice. Also give height of each respective floor—from floor to floor. If the opening is situated in a corner of the Store, or adjacent to a partition, post, or other object, please give distance from Hatch-trimmer to same, and thereby avoid any consequent miscalculation. Send PLUMB LINE size of opening. Write on this (sketch of store) FRONT OF STORE; REAR OF STORE. Do not use North, South, East or West Side—Front and Rear is more intelligible to us. If an Alley-way to side or rear of store mention it, and show doorway as in connection with hatchway, etc.